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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,257	12/19/2001	Larry J. Carson	55578US002	2327

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EXAMINER

SINES, BRIAN J

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/028,257	CARSON ET AL.	
	Examiner	Art Unit	
	Brian J. Sines	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-16,18,19 and 21-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3,5-16,18,19 and 24-40 is/are allowed.
- 6) ☒ Claim(s) 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21 – 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 21 – 23 are each dependent upon canceled claim 20.

Allowable Subject Matter

Claims 1 – 3, 5 – 16, 18, 19 & 24 – 40 are allowed.

Claims 21 – 23 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 1, the cited prior art neither teach nor fairly suggest an analytical cell for the detection of an analyte, wherein the analytical cell comprises:

an elongate lightguide;

an array of conduits extending through the lightguide, wherein the conduits support a migration medium;

wherein the lightguide and its surrounding medium have refractive indices

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selected such that light entering the lightguide is internally reflected within the lightguide to illuminate the conduits and wherein the lightguide comprises an interior surface that is at least partially reflective.

Regarding claim 14, the cited prior art neither teach nor fairly suggest an analytical cell comprising a cover on a substrate, wherein the substrate comprises an array of elongate grooves, wherein a longitudinal axis of the grooves is substantially parallel, wherein the grooves are substantially coplanar and support a migration medium; and wherein the migration medium, the substrate, the cover and the surrounding medium have refractive indices selected such that a lightguide is formed when the cover is placed on the substrate, and light entering the lightguide from a direction normal to the longitudinal axis of the grooves is totally internally reflected at an interior surface of the cover and an interior surface of the substrate to illuminate the grooves.

Regarding claim 18, the cited prior art neither teach nor fairly suggest an analytical device comprising:

- (a) lightguide comprising:
 - (1) a substrate comprising an array of grooves that support a migration medium, wherein the grooves are substantially coplanar and have a substantially parallel longitudinal axis, and
 - (2) a cover on the substrate; and
- (b) a light source outside the lightguide, wherein the source emits a decollimated light beam with an optical axis substantially coplanar with and normal to the longitudinal axes of the grooves, wherein the migration medium, the substrate, the cover and a medium surrounding the substrate have refractive indices selected

such that light emitted by the light source is totally internally reflected at an interior surface of the cover and an interior surface of the substrate to illuminate the grooves.

Regarding claim 29, the cited prior art neither teach nor fairly suggest an assay method comprising the steps of:

- (a) providing an analytical cell comprising:
 - (1) a substrate comprising a plurality of substantially parallel elongate grooves, wherein the grooves are substantially coplanar, support a migration medium, and have longitudinal axes in a first direction, and
 - (2) a cover on the substrate, wherein the migration medium, the substrate, the cover and a medium surrounding the substrate have refractive indices selected such that a lightguide is formed when the cover is placed on the substrate,
- (b) placing a sample on the migration medium in a groove, wherein the sample comprises a fluorescently labeled analyte;
- (c) applying an electric field across the first direction to move the analyte in the groove;
- (d) illuminating the lightguide with a light beam having an optical axis along a second direction substantially coplanar with the plane of the grooves and normal to the first direction, wherein the light entering the lightguide is totally internally

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reflected at an interior surface of the cover and an interior surface of the substrate to illuminate at least a portion of each groove; and

- (e) detecting an emission from the analyte.

Regarding claim 30, the cited prior art neither teach nor fairly suggest an analytical cell comprising:

- (a) a solid lightguide comprising:

- (1) a first wall with a first interior surface, a second wall with a second interior surface, wherein the second wall is opposite the first wall, and the second interior surface faces the first interior surface;

- (2) a reflective third wall with a third interior surface, and a fourth wall opposite the third wall; and

- (3) a surrounding medium adjacent at least one of the walls;

- (b) a plurality of capillaries configured to support a migration medium, wherein the capillaries are fixed in an array at least partially enclosed within the lightguide, wherein the longitudinal axes of the capillaries are substantially parallel and coplanar, and wherein the migration medium, the capillaries, the lightguide and the surrounding medium have refractive indices selected such that light entering the lightguide is internally reflected within the lightguide at the interior surfaces to illuminate the capillaries.

Regarding claim 40, the cited prior art neither teach nor fairly suggest an analytical cell comprising a lightguide, wherein the lightguide comprises:

- (1) a substrate comprising a plurality of substantially parallel grooves, wherein

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the grooves are substantially coplanar and have a substantially arcuate cross section;

- (2) a cover comprising an array of substantially parallel grooves corresponding to the grooves in the substrate, wherein the grooves in the cover are substantially coplanar and have a substantially arcuate cross section, and wherein at least one of the substrate and the cover further comprise a reflective internal surface; and
- (3) a plurality of capillaries in the grooves between the substrate and the cover, wherein the capillaries have a substantially circular cross section, and the longitudinal axes of the capillaries extend in a first direction to form a substantially coplanar array, and wherein the capillaries are configured to support a migration medium; wherein the migration medium, the capillaries, the substrate, the cover and a medium bordering the substrate have refractive indices selected light entering the lightguide from a second direction substantially coplanar with and normal to the first direction is totally internally reflected within the lightguide to illuminate the array.

Response to Arguments

1. Applicant's arguments and amendments, filed 2/25/2005, with respect to each of the rejections under 35 U.S.C. 102(b) and 35 U.S.C 103(a) in the final rejection, mailed 8/19/2004, have been fully considered and are persuasive. Therefore, these rejections have been withdrawn.
2. The indicated allowability of claims 21 – 23 is withdrawn. Claims 21 – 23 are newly rejected under 35 U.S.C. 112, second paragraph.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines, Ph.D. whose telephone number is (571) 272-1263. The examiner can normally be reached on Monday - Friday (11:30 AM - 8 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Brian J. Sines". The signature is fluid and cursive, with the first name "Brian" being more prominent than the last name "Sines".